

Introduction

We are proposing to implement commercial and non-commercial vegetation management, which includes fuel management treatments and site preparation and planting, on approximately 1,615 acres within the Cruzane Mountain project area. Additionally, we are proposing to complete prescribed burning on approximately 1,160 acres. These actions are proposed to be implemented on National Forest System lands on the Superior Ranger District of the Lolo National Forest.

Proposed Project Location

The Cruzane Mountain project area is located approximately 3 miles west of Haugen in Mineral County, Montana and just northeast of the community of Saltese (Figure 6). Cruzane Mountain is the dominant land feature and the project area is located between Interstate 90 and National Forest System Road 288. It is bounded by Packer Creek to the west, East Fork Packer Creek to the north, and McManus Creek on the northeast and east.

The project area covers approximately 3,790 acres within T19 R30 Sections 6, 7, 8, 17, 18, 19, and 20 and T19 R31 Sections 1, 2, 11, 12, 13, and 14 (Saltese and Haugan USGS Topographic Quadrangles). The majority of the project area is on National Forest System lands (3,347 acres or 88 percent) with approximately 443 acres on private lands (12 percent). No land management activities are being considered on these private lands.

Forest-wide goals included in the Lolo National Forest Plan, as well as those specific to management areas found within the project area, provide direction for this project and its development (U.S. Department of Agriculture, 1986). These provide guidance to ensure that projects are developed to move areas towards the desired future conditions.

- Forest-wide management goals applicable to this project
 - Provide a sustained yield of timber and other outputs at a level that will help support the economic structure of local communities and provide for regional and national needs.
 - Provide habitat for viable populations of all indigenous wildlife species and for increasing populations of big-game animals.
 - Provide a pleasing and healthy environment, including clear air, clean water, and diverse ecosystems.
 - Meet or exceed State water quality standards.
- Management Area 13 (Riparian) goals
 - To manage riparian area to maintain and enhance their value for wildlife, recreation, fishery and aquatic habitat, and water quality.
 - To provide opportunities to improve water quality, minimize erosion, and strengthen or protect streambanks through specifically prescribed vegetation manipulation and/or structural means.
 - To provide opportunities to improve fisheries and wildlife habitat through specifically prescribed vegetation manipulation and/or structural means.
- Management Area 16 (Timber Management) goals
 - Provide for healthy stands of timber and optimize timber growing potential.
 - Develop equal distribution of age classes to optimize sustained timber production.
 - Provide for dispersed recreation opportunities, wildlife habitat, and livestock use.
 - Maintain water quality and stream stability.

- Management Area 24 (High visual sensitivity with varying degrees of timber management) goals
 - Achieve the visual quality objective of retention.
 - Provide for healthy stands of timber and optimize timber growing potential within the constraints imposed by Goal 1, while providing for dispersed recreation use opportunities, wildlife habitat, and livestock use.
- Management Area 25 (Medium degree of visual sensitivity with varying degrees of timber management) goals
 - Achieve the visual quality objective of partial retention.
 - Provide for healthy stands of timber and optimize timber growing potential within the constraints imposed by Goal 1, while providing for dispersed recreation opportunities, wildlife habitat, and livestock use.

Need for the Proposal

The purposes of the Cruzane Mountain project are to address past and current insect and disease impacts that have increased the risk of severe wildfire within the project area. In order to support a more healthy and resilient forest in the future, there is a need to manage forest species composition, improve the genetic quality of the forest, and address the increased amount of fuels that have accumulated in the project area as a result of forest health impacts and lack of fire activity.

Existing forest information from Regional V-Map data and local knowledge of the history of the Cruzane Mountain project area was used to understand management needs. V-Map products use remote sensing technology, and are based on a combination of airborne imagery and a nationally available digital topographic and climatic data. V-Map helps understand forest characteristics including 1) lifeform, 2) tree canopy cover class, 3) tree size class, and 4) tree dominance type can be mapped. This information can be used to support mid and base-level analysis and planning.

After a review of this information, as well as Forest Service personnel field surveys within the projects area, this area is dominated by Douglas fir (Figure 1). This species is susceptible to multiple forest insects and disease, such as root rot, western spruce budworm, and Douglas fir beetle. Although large Douglas fir trees are resilient during wildfires, these large trees serve as a seed source, creating stands dominated by this species that are at risk for various impacts. High root rot mortality is already evident in these stands within the project area. Additionally, Douglas fir can persist in the understory as a shade tolerant species and act as a ladder fuel, increasing the risk of crown fires. Generally the dominance of Douglas fir within the project area is directly a result of long-term fire suppression. These characteristics create a need for management action.

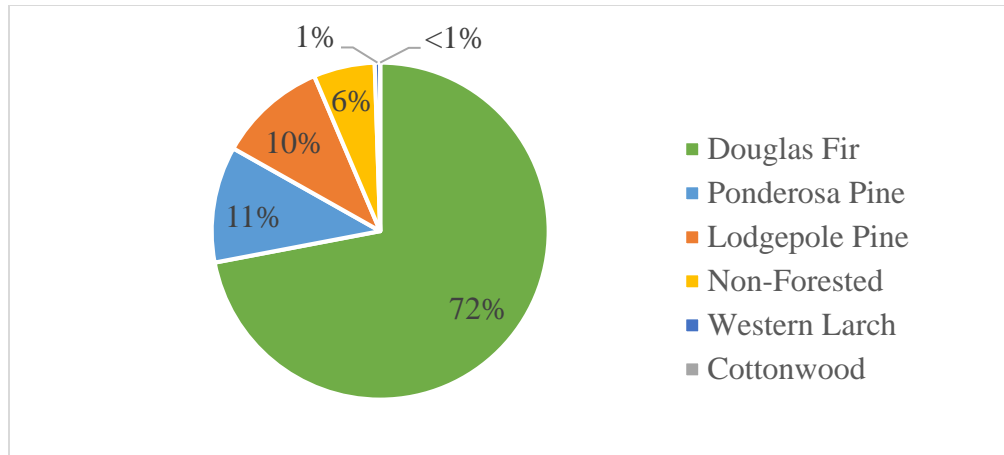


Figure 1. Forest species composition, based on 40 percent dominance within Region 1 V-Map data (05/2019).

Addressing these forest health issues will also enhance the safety of local residents and reduce the risk of catastrophic wildfire. If a wildfire were to occur within the project area, safety of firefighters responding and the efficiency getting into the area is also a concern because the Cruzane Mountain area does not currently have suitable access. Roads that exist within the project area are in need of maintenance to provide access and also to ensure their surface water management structures are sufficient to minimize degradation of water resources to nearby streams and aquatic habitat. Through the project-level transportation analysis, the interdisciplinary team determined several existing National Forest System roads are not needed for current or future management activities. Some roads pose risks to various resources, while others are important for forest management and wildfire response.

The project area is mostly within the wildland-urban interface and most of the project area is within 2 miles of the at-risk community of Saltese. Bounded by Interstate 90 to the south, the Cruzane Mountain area also has an increased number of potential ignition sources from the freeway. This area was included in the 'West End' portion of the county described in the Mineral County Wildfire Protection Plan (Mineral County Community Wildfire Protection Plan, MT, 2018).

Along with the previously described forest conditions and influences that create an urgency for management action, the collaborative group that developed the Wildfire Protection Plan also outlined challenges for wildfire management near West End communities such as Saltese. Several residential areas have one way in and one way out, which does not provide an escape route for firefighters in a wildfire event. Packer Creek Road (NFS Rd 288) is the only access for those residents with homes and properties on the northern side of the project area. The group identified limited water sources to support wildfire response for West End communities and difficulty recruiting volunteer firefighters.

Some background about the project area that contributed to the current forest conditions and wildfire risk:

- Fire has been actively suppressed in the project area for approximately 100 years. This has led to an increase of shade tolerant and intermediately tolerant tree species that are more susceptible to certain insects and disease. This species composition also creates a multiple story forest that is more prone to crown fires because 'ladder fuels' allow fire to more easily move from the understory into the overstory.



Figure 2. An example of multiple stories that can create higher risk for crown fires.

- There was extensive planting of off-site (not local) sapling tree stock following the 1910 and 1930 fires. While these trees have grown very quickly, they have proven more susceptible to insects and disease than native trees and are experiencing high mortality rates. Pathogens that are not normally lethal, such as needle casts, are affecting the health of these trees.
- There is currently high mortality due to mountain pine beetle within lodgepole pine stands visited during the early development of this project. These stands have experienced 50 to 70 percent mortality over the last 10-12 years. These impacts to forest health have created areas of extremely heavy fuel loads across Cruzane Mountain. Addressing fuel loading, as well as increasing species diversity and creating a mosaic distribution of stands of different size classes will promote landscape level mountain pine beetle resistance and long term forest health.



Figure 3. Examples of lodgepole pine stands that have experiences high mortality rates.

- Tree densities in ponderosa pine stands are at a level that makes them a ‘high risk’ for bark beetle impacts. This species is desirable to promote due to its resiliency to wildfire and long-lived characteristics.
- Stem decay and root disease (primarily *Armillaria* root rot) has been identified in stands dominated by Douglas fir and true firs. Douglas fir beetle is starting to increase the mortality in larger Douglas fir, especially those already affected by root rot.



Figure 4. An example of Douglas fir trees killed due to *Armillaria* root rot.

- Dwarf mistletoe is evident in western larch stands, impacting the growth and health of these typically long-lived and wildfire resilient trees.



Figure 5. An example of western larch stands affected by dwarf mistletoe.

- White pine blister rust has and continues to have a huge impact on the project area. It has severely reduced the amount of western white pine in the project area and increased the amount of shorter lived lodgepole pine and other species. Western white pine is desirable to retain and promote due to its resiliency to wildfire and long-lived characteristics.

- A byproduct of these forest management activities is to provide timber and other forest products to help support local economies.

These needs and the existing conditions within the project area demonstrate a departure from the goals and desired future conditions provided in the Forest Plan. Below is a description of the proposed action to move the project area towards the desired future conditions.

Proposed Action

The Forest Service is proposing to use commercial and non-commercial forest management activities, as well as prescribed ecosystem management burns and hand fuel treatments to meet the needs within the project area. Related activities, such as road management activities to support transporting forest products or address resource concerns identified during the transportation analysis process, are described below.

It is important to remember that these proposed actions would not prevent a wildfire and are not a guarantee that homes and property would not be impacted by such an event. The best way to protect any structure from fire is to reduce the ignitability of the structure. The proposed actions would not eliminate the threat to the community from a wildfire. However, they would reduce the threat to the community and would provide firefighters with more and better options in the event of a wildfire.

These actions were developed through the interdisciplinary process, involving multiple Forest Service resource specialists. Contributions from the public, partners, local, state, and other federal entities were considered during the proposal development process and will continue to be included through finalizing the proposed action, as well as the analysis and decision process.

Commercial vegetation management activities

Both regeneration harvesting and intermediate treatments would be used to address the need to shift forest species composition to longer-lived, wildfire resilient and insect and disease resistant species (Figure 7, page 13; Table 1). These include ponderosa pine, western larch, and western white pine.

During recent public meetings, there were concerns brought forward about three of the regeneration units on the western portion of the project area (Units 38, 39, and 40). These units are adjacent to private property and residences along Packer Creek Road. Concerns included potential impacts to nearby private water sources, aesthetics of regeneration harvesting and underburning, and effects to quality elk cover habitat within the project area. The interdisciplinary team reconsidered these units during recent project development meetings and field visits. As a result of these concerns and further internal discussions, these three units are no longer being considered for any type of forest vegetation or fuels management treatment.

Table 1. Commercial vegetation treatments proposed for the Cruzane Mountain project.

Commercial Vegetation Treatment	Acres	Number of Units
Regeneration Harvest (includes shelterwood, seed tree, and clearcut with leave trees)	1,098	42
Commercial Thinning	416	18
Improvement Cut	9	1
Total	1,522	61

Regeneration harvests are a suite of cutting procedures that create a new age class by removing most trees from a stand. Three types of regeneration harvests considered for this project: shelterwood, seed tree, and clearcut with leave trees. These harvest methods are proposed for just under 1,100 acres within 42 units. Each method would be used within these units as necessary and would not necessarily be applied as a single treatment across an entire unit. Marking guides for these harvest units would be tailored to site conditions and current impacts. These would depend on the forest species composition, biophysical setting, and management objective for that stand or portion of the stand, as described below.

Shelterwood is a regeneration method used where a new age class develops beneath the moderated micro-environment provided by residual trees. This harvest method produces a two-aged stand. Generally, residual tree would be retained post-harvest for structure and snag recruitment. This harvesting method would be used in units where the objective of harvesting is to promote ponderosa pine on dry sites, leaving shelter trees onsite and removing trees affected by insect and disease, competition, or trees of lower wildfire resiliency.

Seedtree cuts are used where there are enough un-infected overstory trees of desirable species to provide a seed source for a new age class of trees. This harvest method produces a two-aged stand. Generally, the seed trees would remain post regeneration to provide structure and snag recruitment.

Clearcutting is a regeneration method that would be used when insufficient trees of site-appropriate species exist to retain for either seed production or shelter for regeneration. In units where Douglas fir has high infections and/or mortality from *Armillaria* root rot, clearcutting would be used. Generally, leave or reserve trees would remain to provide structure and serve as snag recruitment.

The Forest is seeking Regional Forester approval to harvest areas larger than 40 acres (Forest Service Manual Chapter 2470, Supplement No. R1 2400-2016-1, 2016). Considering the adjacency and type of harvesting proposed, there are four openings of regeneration harvesting that exceed 40 acres (Figure 8, page 14; Table 2). The objective of these larger regeneration units is to remove dead or dying trees being affected by various insect and disease impacts, as well as shade tolerant species that are less resistant to fire and insects and disease. These harvests would promote shade intolerant species that are longer-lived and resistant to these impacts.

Table 2. Large openings created from regeneration harvesting.

Large Opening ID	Total Number of acres	Number of Units included	Specific Units in each Large opening
1	71	3	41, 54, 55
2	212	9	27, 29, 31, 32, 50, 51, 52, 53, 65
3	424	14	1, 2, 3, 21, 22, 23, 24, 43, 44, 45, 46, 47, 48, 68
4	219	8	4, 7, 9, 10, 11, 14, 26, 42
Total	926	34	

To ensure sufficient regeneration of the desired species following regeneration harvesting, many of the units harvested using regeneration methods would be prepared through either mechanical or underburning site preparation followed by planting a mix of ponderosa pine, western larch, and western white pine. This would occur on 33 of the units. Natural regeneration would be used in the remaining 9 units.

Commercial thinning is an intermediate treatment which reduces stand density of trees primarily to improve growth or enhance forest health. This is proposed on 416 acres within 18 units.

Improvement cuts are used to shift species composition and improve stand quality of the forest by removing less desirable trees species. One unit of approximately 9 acres is proposed for this treatment.

All trees felled during logging operations would be whole tree yarded to designated landing sites to limb, cut to length, and load for transport. Remaining ladder fuels within the units would be felled followed by grapple piling and burning or underburning to treat fuels to an acceptable level.

Several yarding systems would be used dependent on the hillslope, resource concerns, and economic feasibility for various methods. These logging systems include tractor skidding, skyline, excaline, and high bank.

Non-commercial vegetation management activities

Non-commercial forest management activities are also proposed to promote desired species within stands of smaller size classes and/or younger age. Forest management activities to address fuel loading concerns are also included. See Figure 7, page 13, and Table 3.

Pre-commercial thinning is an intermediate treatment in sapling stage stands used to improve composition, structure, condition, health, and growth of the residual stand. This treatment would also reduce fuel loading in these small diameter stands while promoting longer-lived desirable species. Pre-commercial thinning is proposed in 3 units covering approximately 78 acres.

Two areas, totaling approximately 15 acres, along Packer Creek are proposed for fuel break construction. This treatment would be similar to a ‘thinning from below’ where large trees would be retained and most of the understory is removed. This would decrease the wildfire risk and wildfire intensities along the main ingress/egress for residents and firefighters. There is also a benefit to plan these needed fuel breaks out in advance so that during the emergency response to a wildfire, there is more consideration for the various resource impacts. These treatments involve hand crews felling trees with chainsaws and hand piling the slash. No mechanized equipment would be used in these areas.

Table 3. Non-commercial vegetation treatments proposed for the Cruzane Mountain project.

Non-commercial vegetation treatment	Acres	Number of Units
Fuel Break	15	2
Pre-commercial thinning	78	3
Total	92	5

Road management activities

During early project development, a transportation analysis was completed to understand the benefits and risks of national forest system roads and undetermined roads within the project area. While this process provided recommendations on road system management actions for the team and Responsible Official to consider, some adjustments specific to the proposed actions was necessary (Figure 9, page 15). As a result of the interdisciplinary process, several roads were identified as essential to carry out the proposed vegetation treatments as well as access to safely and efficiently respond in the case of a wildfire. Other roads or prisms within the project area were determined unnecessary to keep within the national forest transportation system. The tables below summarize the miles or linear feet of various road system management activities considered in this proposed action. Please note that no change in public motorized

access into the project area is proposed at this time and that ensuring access restrictions through closure methods (such as gates or other barriers) would be maintained or improved through road management activities.

Public concerns were brought forward about impacts to snowmobile use along NFS Road 288 (Packer Creek Rd) if winter logging is required. On-going coordination is occurring with local snowmobile groups and District staff to identify ways to accommodate snowmobile traffic and minimize impacts to recreational experiences along this snow route in the case winter logging is necessary.

Road maintenance and reconstruction of existing national forest system roads is proposed for approximately 10 miles (Table 4). Routine maintenance includes surface water management, brushing, blading/grading, adding surface gravel, and any necessary dust abatement. Reconstruction is needed along existing road prisms that have not been accesses for several years and would require heavier equipment work to ensure they can provide sustainable access for project activities and future management needs.

Construction of new national forest system roads is proposed for 5.4 miles. These new roads would provide long-term access needs into the project area. One segment location will be ground verified in the coming months to ensure its location avoids any potential impact to wildlife habitat resources identified during the interdisciplinary process.

Two miles of existing roads would be placed in a storage status but would remain part of the national forest road system as intermittent storage status (Level 3SN in the tables below).

Road maintenance followed by decommissioning (Levels 3D and 5D in the tables below) would occur on 2.4 miles of national forest system roads. These road segments are needed to carry out proposed activities, but would be decommissioned and removed from the national forest road system following project completion.

Additionally, 5.5 miles of existing national forest system roads would be decommissioned and removed from the road system (Table 5). Many of the roads proposed for 3DN level of treatment are not known to have corrugated metal pipes installed and have trees currently established within them. At this time, the appropriate level of treatment is allow them to continue to naturally decommission. During this field season, these road segments will be visited. In the case that pipes do exist and pose a risk to the watershed resources, the level of treatment they receive would be changed to reflect this need. The short segment of road proposed for 5D level of treatment is currently located adjacent or within an intermittent stream riparian area. Rather than reconstruct/maintain and use this segment of road, a temporary road in a more sustainable location has been proposed. Both the existing road prism and temporary road would be decommissioned following project completion. Please see the tables below for descriptions of the level of treatment for these roads.

Table 4. Road management activities for the national forest road system proposed in the Cruzane Mountain project.

Road Management Activity	Miles
Road Reconstruction - Existing system road	5.8
Road Maintenance - Existing system road	4.1
New Construction - Add to system	5.0
New Construction - Add to system, Alignment to be determined	0.4

Existing System Road - Natural Storage (3SN)	2.0
Road Maintenance / followed by decommissioning (3D)	1.9
Road Maintenance / followed by decommissioning (5D)	0.5
Total	19.7

Table 5. National forest system road closures and decommissioning proposed in the Cruzane Mountain project.

Existing system roads to be closed/decommissioned	Miles
Existing system road decommission/remove from system (3DN)	5.4
Existing system road decommission/remove from system (5D)	0.1
Total	5.5

Table 6. Road closure level descriptions for existing national forest system roads for the Cruzane Mountain project area.

Level	Typical Closure Device <i>(Site specific situation dependent)</i>	Typical Prism Treatment <i>(All treatments are as-needed)</i>
3-SN Natural Storage	Re-contour intersection (entrance obliteration) or rock/earth barrier as needed.	No physical or weed treatment needed; Naturally revegetated and stabilized.
3-DN Natural Decommission	Re-contour intersection (entrance obliteration) or rock/earth barrier as needed.	No physical or weed treatment needed; Naturally revegetated and stabilized.
3-D Decommission	Re-contour intersection (entrance obliteration) or rock/earth barrier as needed.	<ul style="list-style-type: none"> • Waterbar or outslope • Remove all corrugated metal pipes & restore watercourse • Scarify or rip upper 6-12", seed/fertilize as needed • Scatter slash on slopes, • Treat noxious weeds.
5 - Decommission	Re-contour	<ul style="list-style-type: none"> • Re-contour entire prism • Remove all corrugated metal pipes and restore watercourses • Seed and fertilize • Scatter slash on slopes • Treat noxious weeds

In addition, 3.9 miles of temporary roads would be needed to carry out commercial and non-commercial forest vegetation management activities (Table 7). Following completion of project activities, these temporary roads would be decommissioned according to contract specifications, which includes removing

culverts, roadbed obliteration, applying slash or seeding/mulching as necessary, and ensuring these prisms return to productivity.

Table 7. Temporary roads to be used and decommissioned following proposed vegetation management activities.

Temporary Roads	Miles
Temp Road - Decommission after use	3.9

Ecosystem management burns

Two areas of prescribed burning, or ecosystem management burns, are proposed to re-introduce fire as a management tool within the project area (Figure 10, page 16; **Table 8. Ecosystem management burns proposed in the Cruzane Mountain project.** Table 8). These prescribed burns would occur after harvesting to accomplish multiple objectives: 1) reduce slash from logging operations, 2) reduce hazardous natural fuels, 3) regenerate browse for big game winter range, and 4) reduce conifer encroachment within existing open areas.

Natural barriers (ridges and draws) would be used for the majority of the control lines. Hand fireline would be needed along the private property on the western boundary of LS2 and LS3. The prescribed burns would be conducted at the landscape level which would treat both the harvest units and the unharvested portions of the burn block. This would create a mosaic burn pattern with varying levels of fire intensity which reduces and breaks up the continuity of the hazardous fuels.

Table 8. Ecosystem management burns proposed in the Cruzane Mountain project.

Unit	Acres
LS1	40
LS2	1,041
LS3	80
Total	1,161

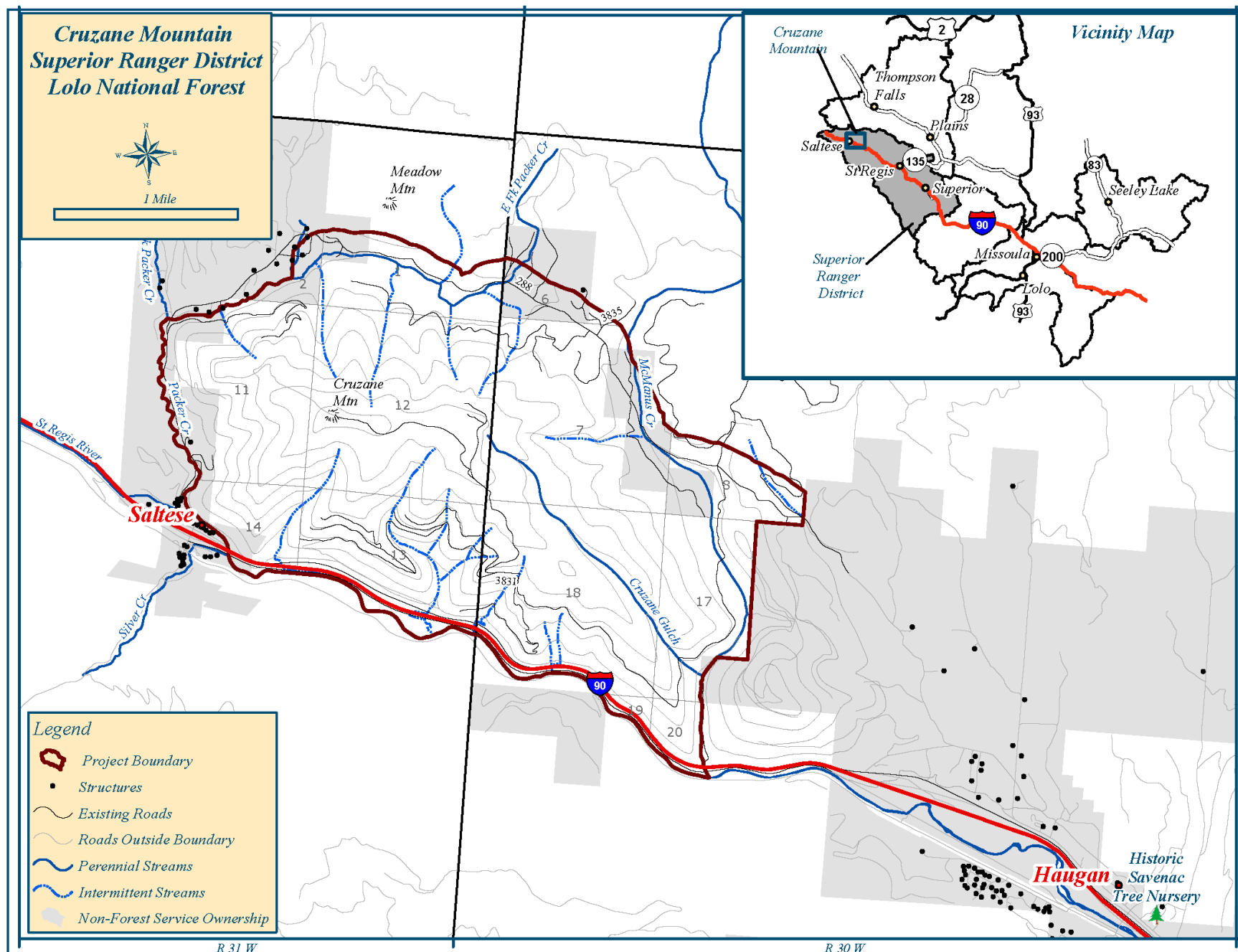
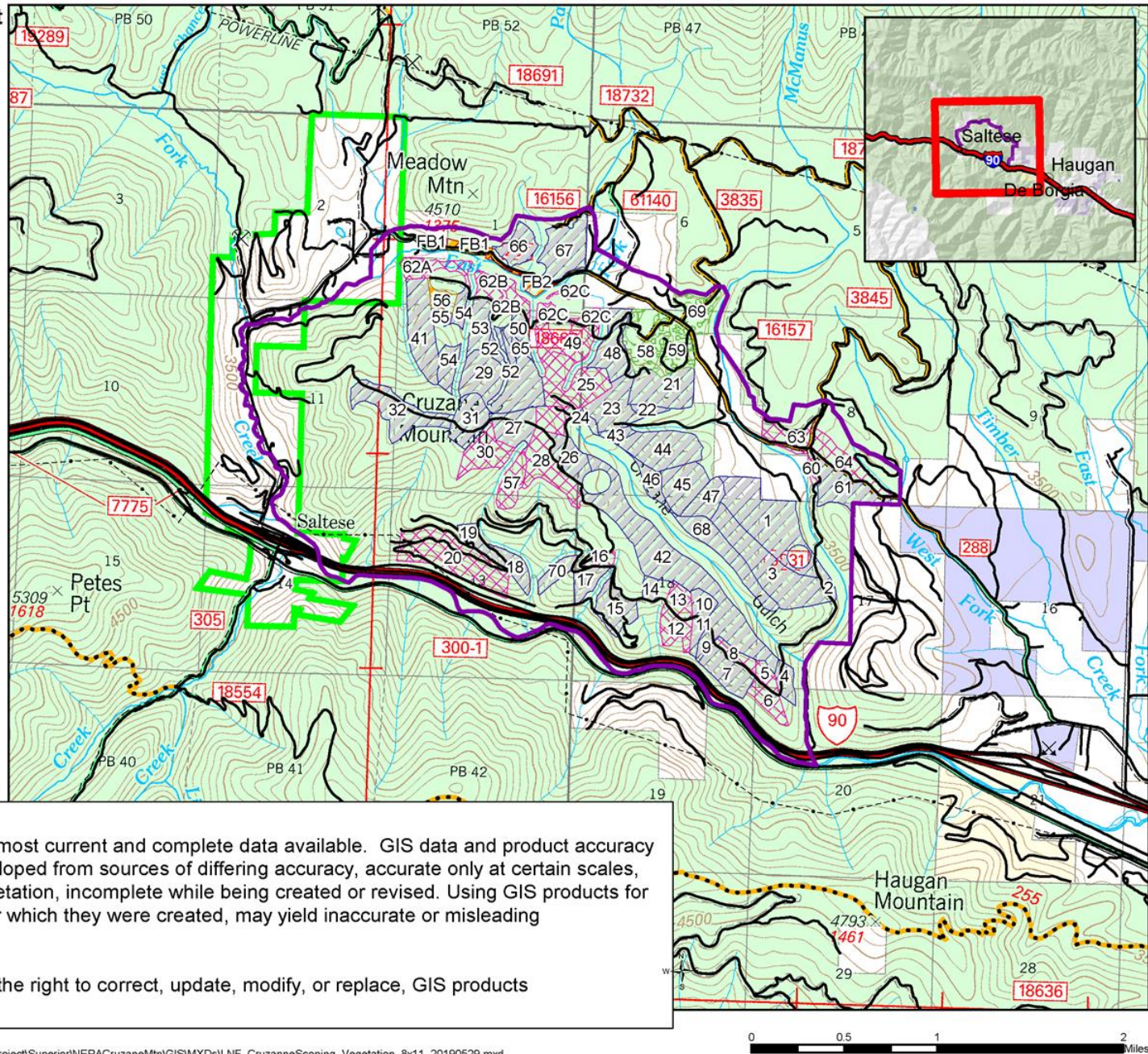


Figure 6. Cruzane Mountain Project Area, Vicinity Map.

**Cruzane Mountain Project
Vegetation
Proposed Action
Superior Ranger District
Lolo National Forest**

-  Cruzane Project Area Boundary
- Treatment**
-  Commercial Thin
 -  Fuel Break
 -  Improvement Cut
 -  Precommercial Thin
 -  Regeneration Harvest



Disclaimer:

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Figure 7. Cruzane Mountain Proposed Action: Vegetation Management Activities.

Cruzane Mountain Project
Vegetation Management
Proposed Action

Large Openings

Lolo National Forest
Superior Ranger District

Large Opening ID

-  Large Opening ID 1
-  Large Opening ID 2
-  Large Opening ID 3
-  Large Opening ID 4
-  Project Area

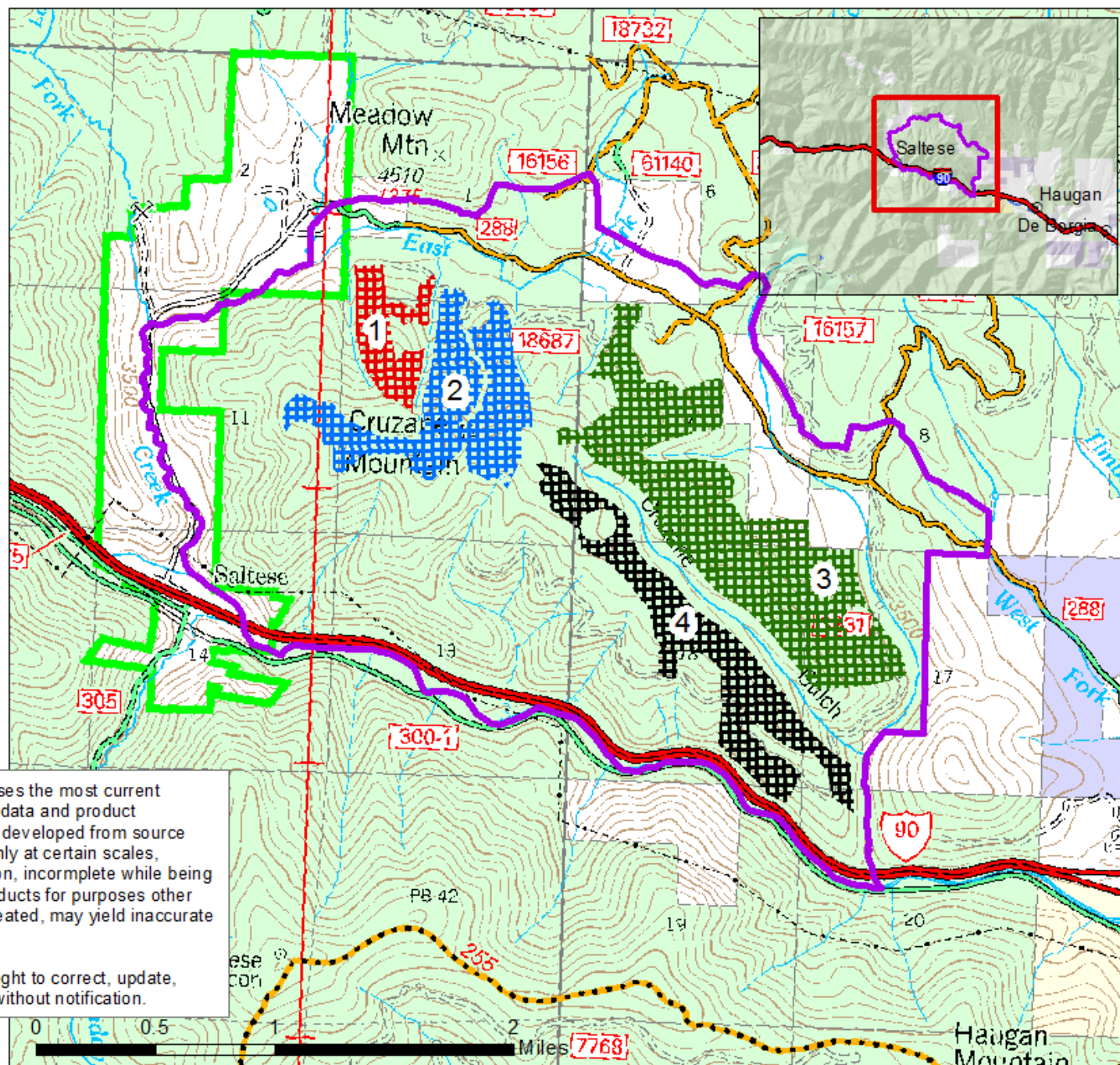



Figure 8. Cruzane Mountain Proposed Action: Large Openings created from regeneration harvesting.

**Cruzane Mountain Project
Transportation
Proposed Action
Superior Ranger District
Lolo National Forest**

 Cruzane Project Area
Boundary

**Proposed Action
Treatment**

 Decommission

 Road Maintenance -
Decommission after
Implementation

 Add to System

 Alignment to be
determined

 No Action

 Road Maintenance

 Road Reconstruction

 Temporary Road

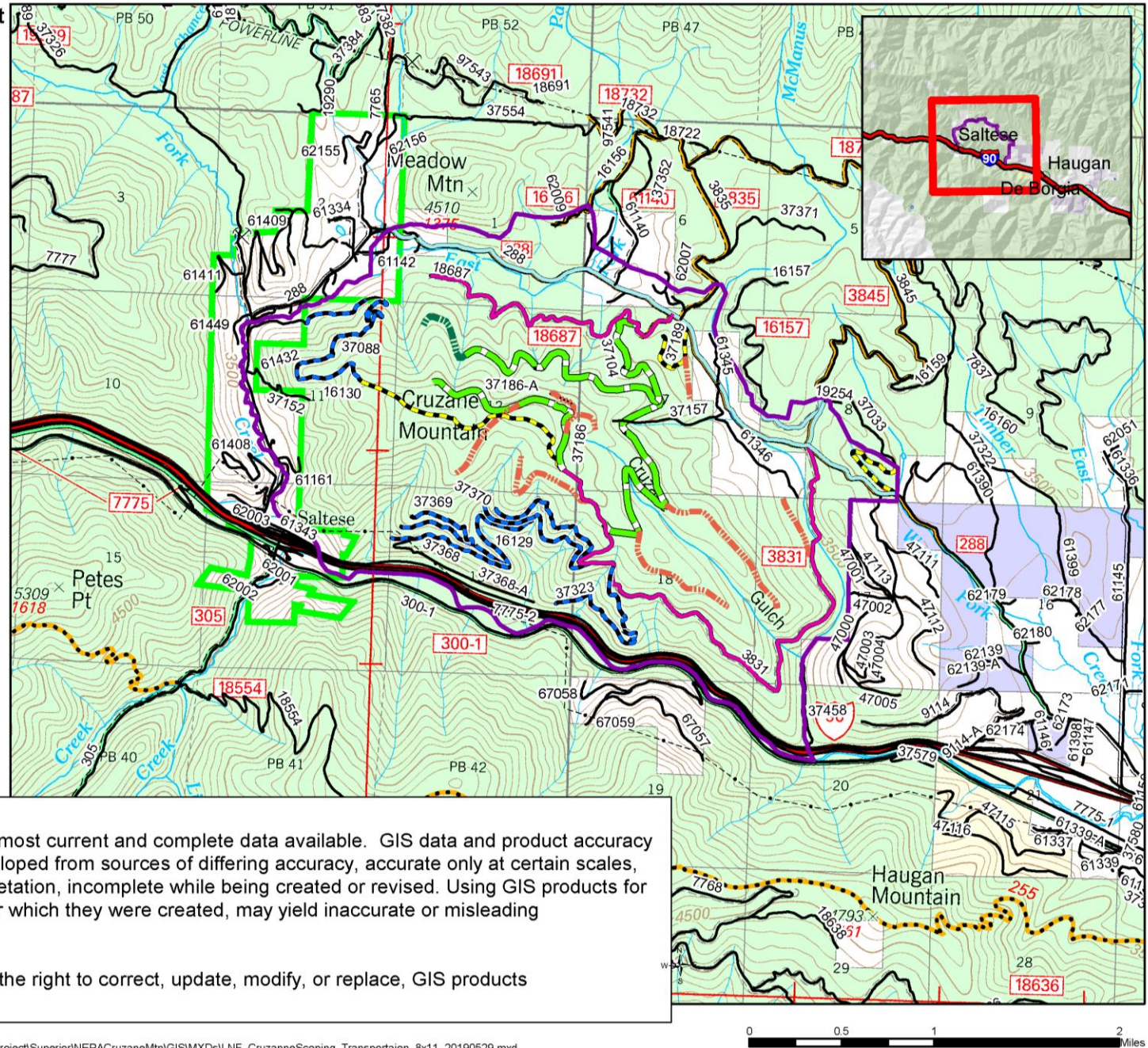


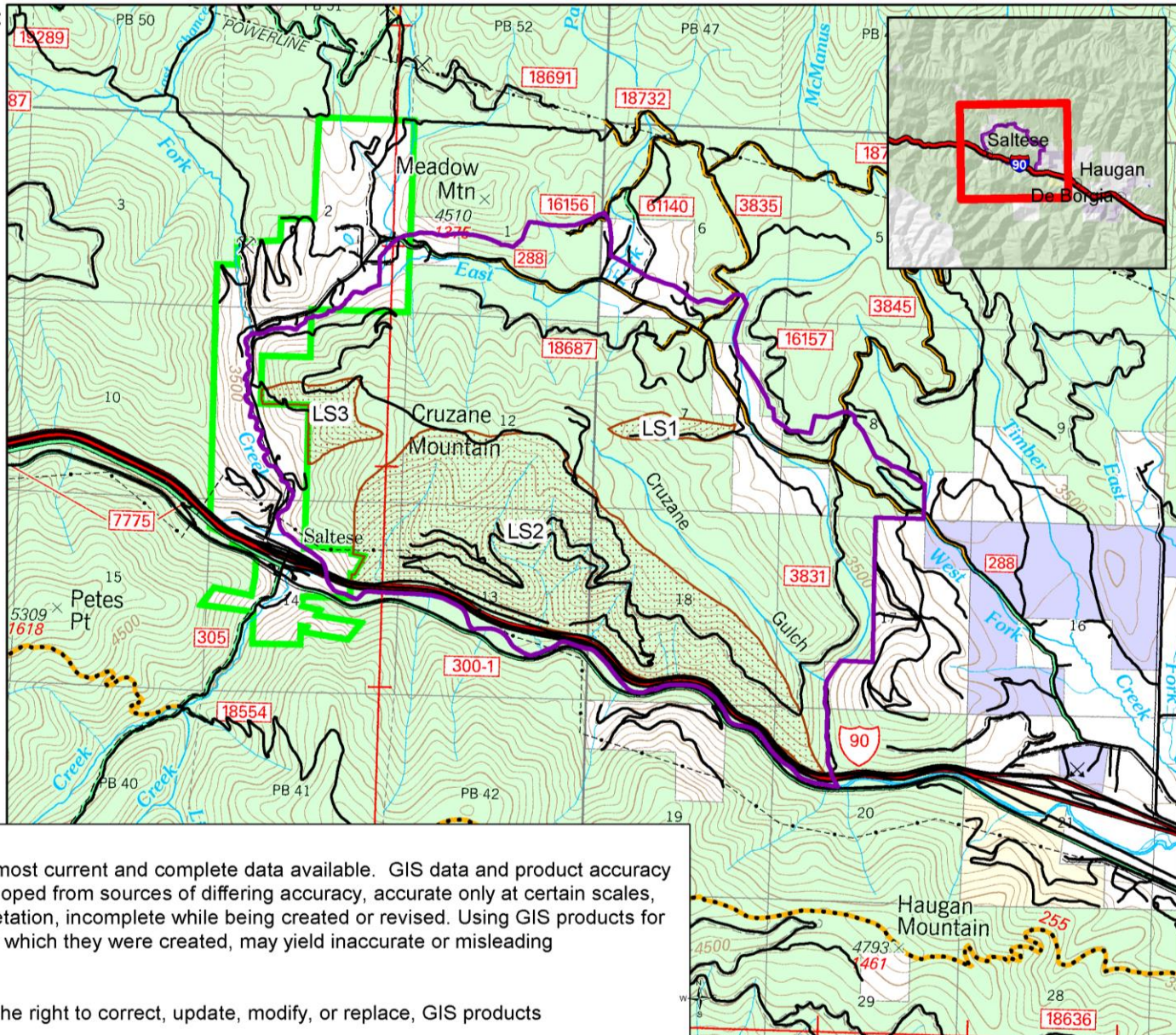


Figure 9. Cruzane Mountain Proposed Action: Road Management Activities.

**Cruzane Mountain Project
Fuels Proposed Action
Superior Ranger District
Lolo National Forest**

-  Cruzane Project Area Boundary
-  Ecosystem Management Burning



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Figure 10. Cruzane Mountain Proposed Action - Ecosystem Maintenance Burning.